

### Claims

1. Process for preparing a low water-uptake precipitated silica, comprising the following successive steps consisting  
5 in :

(a) producing an initial feedstock comprising a silicate, the silicate concentration in the feedstock, expressed in  $\text{SiO}_2$  equivalent, being less than 15 g/l;

10 (b) by adding an acidifying agent, bringing the pH of the medium to a value of between 7 and 8 ;

(c) in the resulting medium, simultaneously adding a silicate  
15 and an acidifying agent, the respective amounts of added silicate and acidifying agent over time being specifically selected such that, throughout the addition:

- the pH of the reaction medium remains between 7 and  
20 8;

- the silicon concentration in the medium, expressed  
in  $\text{SiO}_2$  equivalent, remains less than or equal to 35  
25 g/l;

(d) adding an acidifying agent to the medium resulting from  
step (c), so as to bring the medium at a pH of between 3 and  
6.5; and

30 (e) filtering the resulting aqueous silica dispersion, then drying the filter cake obtained at the end of the filtering step.

2. Process according to claim 1, characterised in that the silicates used in steps (a) and (c) are alkali silicates.
- 5 3. Process according to either claim 1 or claim 2, characterized in that the acidifying agents used in steps (b), (c) and (d) are selected among sulfuric acid, hydrochloric acid, nitric acid, acetic acid, formic acid and carbonic acid.
- 10 4. Process according to any one of claims 1 to 3, characterized in that the feedstock of step (a) is in the form of an aqueous silicate solution, having a concentration, expressed in  $\text{SiO}_2$  equivalent, of less than or equal to 10 g/l.
- 15 5. Process according to any one of claims 1 to 4, characterized in that the acidifying agent of step (b) is introduced in the form of an aqueous solution having a normality of between 0.25 N and 8 N.
- 20 6. Process according to any one of claims 1 to 5, characterized in that the acidifying agent of step (b), is sulfuric acid, introduced in the form of an aqueous solution having a concentration of between 10 g/l and 350 g/l.
- 25 7. Process according to any one of claims 1 to 6, characterized in that the simultaneous addition of the silicate and acidifying agent of step (c) is carried out by continuously adding silicate to the medium, the pH being adjusted during the addition by introducing acidifying agent  
30 if the pH of the medium becomes greater than a given control value, of between 7 and 8.

8. Process according to any one of claims 1 to 6, characterized in that the simultaneous addition of the silicate and acidifying agent of step (c) is carried out by continuously adding silicate to the medium, the pH being  
5 adjusted during the addition by introducing silicate if the pH of the medium becomes less than a test value of between 7 and 8.

9. Process according to any one of claims 1 to 6,  
10 characterized in that the simultaneous addition of the silicate and acidifying agent of step (c) consists in continuously adding both acidifying agent and silicate, with concentrations and flow rates calculated such that, throughout the addition, the pH of the medium remains between 7 and 8.

15  
10. Process according to any one of claims 1 to 9, characterized in that the silicate that is introduced during the simultaneous addition of step (c) is in the form of an aqueous solution having a concentration of between 10 g/l and  
20 360 g/l.

11. Process according to any one of claims 1 to 10, characterized in that the acidifying agent that is introduced during the simultaneous addition of step (c) is in the form of  
25 an aqueous solution having a normality of between 0.25 N and 8 N.

12. Process according to any one of claims 1 to 11, characterized in that the addition of step (c) last between 15  
30 and 300 minutes.

13. Process according to any one of claims 1 to 12, characterized in that an aluminum compound is introduced to the medium at the end of step (c), and/or between step (c) and step (e).

5

14. Process according to any one of claims 1 to 13, characterized in that step (d) is used, and in that the acidifying agent from step (d) is introduced to the medium in the form of an aqueous solution having a normality of between 0.25 N and 8.

10

15. Process according to any one of claims 1 to 14, characterized in that steps (a), (b) (c) and (d) are carried out at a temperature of between 90 and 100 °C.

15

16. Process according to any one of claims 1 to 15, characterized in that the aqueous silica dispersion resulting from step (d) is subjected to a maturation step, prior to step (e).

20

17. Process according to any one of claims 1 to 16, characterized in that step (e) comprises a process of splitting the precipitate cake.

25 18. Aqueous silica composition obtainable by the splitting process of claim 17.

19. Precipitated silica having a water-uptake of less than 6%, obtained by the process of any one of claims 1 to 17, or by spray-drying a silica composition according to claim 18.

30

20. Use of a precipitated silica obtained by the process of any one of claims 1 to 17, or by spray-drying a silica composition according to claim 18, as a reinforcing filler in a silicone-based matrix.

5.

21. Use according to claim 20, wherein the silicone-based matrix is shaped by extrusion.

10 22. Use of a precipitated silica obtained by the process of any one of claims 1 to 17, or by spray-drying a silica composition according to claim 18, as a reinforcing filler in a matrix based on one or more elastomers.

15 23. Use according to claim 21, characterized in that said matrix based on one or more elastomers is a transparent or translucent matrix.

20 24. Use of a precipitated silica obtained by the process of any one of claims 1 to 17, or by spray-drying a silica composition according to claim 18, as a thickening agent within an organic or aqueous medium.

25 25. Use of a precipitated silica obtained by the process of any one of claims 1 to 17, or by spray-drying a silica composition according to claim 18, as a support in food or cosmetic compositions.

30 26. Use of a precipitated silica obtained by the process of any one of claims 1 to 17, or by spray-drying a silica composition according to claim 18, as a filler, a support and/or an excipient within a pharmaceutical composition.

27. Pharmaceutical composition comprising a precipitated silica obtained by the process of any one of claims 1 to 17, or by spray-drying a silica composition according to claim 18.